The internationalisation of higher education in Uzbekistan: Some thoughts about Uzbek student mobility and spatial distribution of research cooperation

Alimukhamedov, Farkhad

Veröffentlichungsversion / Published Version
Zeitschriftenartikel / journal article

THE INTERNATIONALISATION OF HIGHER EDUCATION IN UZBEKISTAN: SOME THOUGHTS ABOUT UZBEK STUDENT MOBILITY AND SPATIAL DISTRIBUTION OF RESEARCH COOPERATION

FARKHAD ALIMUKHAMEDOV

Abstract. This article focuses on the internationalisation of higher education in post-Soviet Uzbekistan based on two main areas: international student mobility and international research cooperation. The data extracted from the UNESCO Institute of Statistics (UIS), Web of Science (WoS) and Scimago helps to discuss about the challenges in internationalisation process.
Keywords: *Uzbekistan, internationalization of higher education, student mobility, international research cooperation, Netscity.*

Acknowledgements
I thank Dr. Marion MAISONOBE (CNRS) for her support in implementing Netscity application.

1. Introduction

The purpose of this article is to present an overview and trend of Uzbekistan's internationalisation. International student mobility is a visible area of internationalization in the region, and bibliometric analysis can help us learn more about international research cooperation. We suggest that these two areas are interrelated, respond to government policies, and are affected by global changes. However, our goal is not to review government policies or global changes, but to

provide limited analysis based on data in two internationalised fields. This article helps to focus on the current stage of Uzbekistan's internationalisation and to understand how developing countries are affected by globalization and the unequal global knowledge transfer system.

This article firstly argues about internationalisation and its actual scale in Central Asian area, analysing the outbound student mobility and international research cooperation in the region to understand whether our proposed framework corresponds to explaining the situation in these two fields. The discussion section pointed out global and domestic challenges which are not limited to financial conditions.

The literature about internationalisation of higher education in Central Asia was available through the reports of international organizations (World Bank, 2007, 2014) which included debates about internationalisation within the landscape of higher education. In other studies, Merill (2011) argued about internationalisation in Central Asia considering from US perspective, while Jones (2010) discussed about the role of education in cooperation between European Union and Central Asia. More recently studies focused on country cases especially – Kazakhstan (Sagintayeva and Karakbayev 2013; Jumakulov et al; 2019; Kenebayeva 2019; Kerimkulova and Kuzhabekova, 2017, Lee and Kuzhabekova, 2017; Kuzhabekova, 2020), Uzbekistan (Uralov, 2020; Ubaydullaeva 2020), Kyrgyzstan (Sabzalieva, 2019) and Tajikistan (De Young, Kataeva, Jonbekova, 2019) show the increasing interests in investigating different aspects of internationalization process.

Knight (2003; 2) refers to internationalisation as "*'the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of post-secondary education"* Miri Yemini (2015 ; 20) regards internationalisation as *"the process of encouraging integration of multicultural, multilingual, and global dimensions within the education system, with the aim of instilling in learners a sense of global citizenship"*. In fact, goals and policies may vary depending on the perception of internationalisation. Crăciun (2018) emphasized that internationalization is still a new phenomenon, indicating that about 80 per cent of countries do not have an appropriate internationalization strategy. Tamtik's (2017) comparison of internationalisation strategies also show different rationales of governments despite long-term research and mobility

cooperation between the universities. Therefore, Knight argued *"Internationalisation is a term that means different things to different people "*. She also highlighted five myths of internationalization, reflecting very common and misleading assumptions (Knight 2011).

According to EU report on Central Asian internationalisation *"The key dimensions of internationalisation of higher education comprise three areas: student and staff mobility; the internationalization and improvement of curricula and digital learning; and strategic cooperation, partnerships, and capacity development"* (Helbich, Andrea Miskovicova, 2007; 11).

2. Theory

For functionalists (Lee, 1966; Harris and Todaro, 1970) mobilities reduce inequality, while human capital theory Sjaastad (1962) views mobility and migration as an investment. Blaud (2001) applies Lee's pull and push theory on student migration of African student to Canada. However, historico-structural theories stressing rising inequality are more popular related to both phenomena. Especially, the "brain drain" related to student migration and dependency of peripheral countries related to research output are underlines. However, dependency theory (Frank, 1969), world system theory (Wallestein, 1974) or globalization theory (Wimmer, Glick, Schiller, 2002) can be criticized based "idealization of migrant's state of nature" (Castles et al, 2020). Several studies showed the different experiences based on origin states related to student mobility (Borgogno, Streiff-Fénart, 1997).

In Central Asian case outward student mobility and international research cooperation are debated in several theoretical environments. For example, Chankseliani (2015) provided world system theory to explain outward student mobility after the collapse of Soviet Union. Syed Zwick (2019) applies the motivation-opportunity-capacity model to explain student mobility in Central Asia. Kuzhabekova (2020) explains the limits of North South categorization in explaining international research cooperation. She uses the concepts of misrecognition and governmentality instead of utilization of North South dichotomy which

"leads to emergence of the neo-colonial Eurocentric map of scholarly activity where Eurasian research community is marginalized".

I argue to avoid "victimizing" developing countries from one hand, but without taking the data as a criterion to define their current positions from another. Instead, we consider that arguing about *opportunities, constraints* (and capacities) be more suitable to explain the state of internationalisation in the Central Asian region. *Capacities* is an important element that we cannot measure in this paper. Therefore, we focus only on opportunities and constraints in our work. These two notions are linked, we focus on the notion of opportunity availability which also relies on external actors in the context of internationalisation. If in the framework of mobility an opportunity can be considered as the availability of a scholarship, admission, recognition, etc., in the framework of international cooperation a research project, international funding is among the windows of opportunity.

A constraint here encompasses the factors preventing student mobility, international cooperation. It includes factors such as non-recognition of diplomas, legal difficulties, but also political and economic factors which directly or indirectly have an impact on action. Despite a general assumption (EAIE, 2014), an opportunity in the internationalisation of higher education is not limited to financial concerns; it is also based on the internationally recognised and valued level of interaction in the commitment of partners. A corresponding opportunity arises when two or more institutions view cooperation positively and estimate their future cooperation. Therefore, the results of Uzbekistan's student mobility and scientific cooperation also show the level of established networks and existing cooperation opportunities within the global higher education community. We are trying to verify our argument based on the data on student mobility and international scientific cooperation.

3. Methods

This research is mainly based on secondary data. The main resources used in this research are the UNESCO Institute for Statistics (UIS),

Scimago scientific journals and the national ranking website, the Web of Science (WoS). The data obtained through WoS is interpreted using the Netscity application.

Reliable qualitative data does not support this study. It does not provide interviews with researchers, students, or policy makers. The study neither provides an analysis of social changes in a transition society, nor an analysis of higher education laws.

4. Explaining Outward Student Mobility in Central Asia: Changing Opportunities and Networks

Higher education funding challenges are visible in Uzbekistan after the fall of the USSR (Ruziev, Burkhanov, 2018). The World Bank report points out that the share of private funding in higher education in Uzbekistan is higher than that of the United States or the United Kingdom, at over 60 per cent (Naqvi, Kheyfets, 2014; 76). Uzbekistan's education plan for 2019-2023 also shows that funding gaps in higher education will increase further (UNESCO, 2020).

However, the two areas of internationalisation that we are studying have not been equally affected by the lack of funding and networking opportunities. For example, student mobility was supported just after the fall of the USSR by some Central Asian governments with public grants funding study mobility ("Bolashak" programme in Kazakhstan and "Umid" in Uzbekistan). Today mainly based on private funding, outgoing mobility still plays a major role as an area of internationalisation of higher education. All five "stans" have taken an active part in student mobility, while the majority of Central Asian students studying abroad are self-financed students. Student mobility in the region is the highest in the region, at over 10 per cent according to the UNESCO Institute for Statistics.

Table 1

Outward student flow from Central Asia

Period/ Country	2013	2014	2015	2016	2017
Kazakhstan	54 172	66 998	78 259	90 212	84 681
Kyrgyzstan	5 912	8 368	9 456	11 484	11 399
Tajikistan	10 328	12 919	15 719	20 773	19 762
Turkmenistan	38 680	47 543	51 065	47 872	46 223
Uzbekistan	20 350	26 119	28 119	32 907	34 990

Source: UNESCO

Chankseliani (2015) explained that the post-Soviet student mobility was based on Wallerstein's whorls system theory. She states that in the light of that theory, the absolute majority of post-Soviet countries are peripheral with exception of Russia *"While being peripheral for the core countries, Russia is a core country for post-Soviet states"* (Chankseliani, 2015; 302). Diana Ibanez Tirado (2020, 53) however, suggests that *"the region-based concepts of the Middle East, Central Asia and the Caucasus as separated geographical spaces or/and fields of area-studies from which the students originate do not allow enough conceptual space for recognising and grappling with the fluid nature of the transregional intersections and overlying arenas of interaction"*

Table 2

Net flow of international students in Central Asia (inbound-outbound)

Indicator	Net flow of internationally mobile students (inbound-outbound), both sexes (numbers)				
Country/Time	**2013**	**2014**	**2015**	**2016**	**2017**
Kazakhstan	*-45462*	*-56020*	*-68282*	*-77679*	*-70831*
Kyrgyzstan	*5351*	*3703*	*3267*	*3500*	*3397*
Tajikistan	*-8662*	*-11761*	*-13853*	*-19211*	*-17524*
Turkmenistan	…	*-47456*	…	…	…
Uzbekistan	*-19777*	*-25435*	*-27357*	*-32183*	*-34387*

Source: UNESCO Institute of Statistics

The net flow ratio shows that the Central Asian region has one of the highest outward student mobility ratios in the world. However, this number can be reconsidered based on the opportunity for students in

enrolment in higher education. Unfortunately, the opportunities for higher education in some countries in the region, including Uzbekistan, are still low. According to data from the World Bank in 2012, according to regional and international standards, Uzbekistan's overall higher education enrolment rate is low, which was only 9 per cent 2011 (Naqvi, Kheyfets, 2014; 45). Sabzalieva (2020) also points out that one of the driving forces behind student mobility in Uzbekistan is the lack of available places in higher education institutions. Tirado (2020) and Chankseliani (2015) emphasized factors such as limited employment along with higher education opportunities in home countries. Chankseliani (2015; 305) considers that *"Outward student mobility may be explained by the availability of tertiary education and jobs in students' home countries. The analysis of availability can include the examination of the availability of opportunities by type, quality, or attractiveness."* As a result of this situation in higher education, the current Uzbek government has taken several measures to expand access by opening new institutions that are mainly branch campuses of foreign universities (Sabzalieva, 2019).

Table 3

Net flow ratio of internationally mobile students (inbound-outbound)

Indicator	Net flow ratio of internationally mobile students (inbound-outbound), both sexes (%)				
Country/Time	**2013**	**2014**	**2015**	**2016**	**2017**
Kazakhstan	-5,8	-7,7	-10,4	-12,5	-11,3
Kyrgyzstan	1,9	1,4	1,2	1,4	1,5
Tajikistan	-4,4	-5,6	-6,2	-7,8	-6,6
Turkmenistan	…	-106,9	…	…	…
Uzbekistan	-7,6	-9,8	-10,4	-12,1	-12,2

Source. UNESCO Institute of Statistics

However, world system theory cannot provide a complete explanation of Kyrgyzstan's position as a sending and receiving country for students. The theory also finds it difficult to explain the fact that Kazakhstan is hosting an increasing number of students (about 25000 in 2019-2020). Furthermore, it does not fully explain the increasing rate of mobility from Uzbekistan and Central Asia in general to the Czech Republic, Latvia, Belarus or Ukraine. Finally, it does not take into

account the complexities of migratory categories, as the current rate of Turkmen students abroad cannot be limited to academic factors alone.

Although system-world theory places Russia as a centre for Uzbekistan, there are also other practical reasons for an *ad hoc* situation. Due to bilateral agreements and accords within Commonwealth of Independent States, Moscow offers more opportunities for mobility with less immediate constraints. In addition, Russian Federation is the main destination for labour migration, which creates opportunities for outward student mobility. It is also one of the few countries with relatively accessible immigration rules for Uzbek nationals. Beyond that, there are chances for Uzbek students for getting governmental scholarships, and the branches of Russian universities have also been active in Uzbekistan for over the decades. Young people's choices are strongly influenced by these immediately available opportunities. Therefore, we consider that outgoing student mobility from Uzbekistan may have a new destination with the new actors, but the Russian Federation will probably remain a leading destination.

In addition, we suggest that the share of outgoing mobility is also linked to opportunities offered by host countries and existing networks. Previous studies of Uzbek student mobility to France and the United Kingdom have highlighted the difficult conditions of departure and the role of grants or networks in mobility beyond mobility in the post-Soviet space. (Alimukhamedov, 2011). Indeed, there is an inequality of opportunities for Central Asian students to study abroad and their constraints determine the vectors of mobility. Consequently, the immigration policies of sending and receiving countries as constraints play a decisive role in student mobility, which explains low mobility outside the post-Soviet space (Table 4). On the other hand, a recent reduction of constraints such as the facilitated recognition of foreign degrees by the government and the generally positive attitude towards Uzbek students abroad adopted in recent years have encouraged more students to move abroad.

Table 4

Main destination countries of Uzbek students

Indicator	Students from Uzbekistan, both sexes (number)					
Year/Country	2013	2014	2015	2016	2017	2018
Russian Federation		12783	16162	19893	20862	
Kazakhstan	3049	4969	3529	3607	3818	3768
Ukraine		2072	2061	2049	2022	1872
Republic of Korea	411	475	700	1074	1716	
Latvia	190	366	625	874	1025	
Turkey	251	371	556	652	736	
Malaysia		787	671	660	666	295
Germany	789	786	727	673	651	
Kyrgyzstan	1219	1142	620	541	508	882
United States of America	425	440	480	544	495	
Japan	202	214	260	315	384	
Poland	73	84	135	221	249	
Czechia	173	159	152	175	215	
Italy	76	155	176	207	211	

Source: UNESCO Institute of Statistics

As shown in above table any window of opportunity has the chance to create new destinations for Uzbek students. For example, Turkish scholarship programmes combined with the normalisation of relations between two countries had a rapid impact on the number of students choosing Turkish higher education institutions. The relative increase in mobility to the Republic of Korea or Latvia can also be explained by the new matching opportunities (scholarship, agents). Furthermore, these developments indicate that the *second destination country* in outgoing mobility from Uzbekistan may change based on new opportunities. Similar to Russian case, Kazakhstan's role as a destination country for Uzbek students based on very practical explanations (access, less administrative constraints, neighbouring country, agents, etc). This also partly explains the future variations in the second country of destination, which depends heavily on the opportunities provided by host countries. The networks and agents may heavily impact vectors of outward student mobility and play a decisive role in determining the destination country, rather than cost, prestige or recognition.

Despite the high rate of outward student mobility, the rate of incoming students still needs to be reviewed. Especially Uzbekistan,

Tajikistan and Turkmenistan have very low rate of incoming students which shows the other challenges of internationalisation in the region. That may also question the rationales of internationalisation in Uzbekistan (Ubaydullaeva, 2020) by questioning the role of new "franchise" branch campuses as providers of "internationalisation at home".

5. The increasing influence of international partners in research cooperation

We argue research funding is one of the most important constraint because Central Asia has had the lowest rate of research funding in relation to its GDP since 2003 (UNESCO, 2015). The research institutions funding heavily rely on governments in Central Asia. Beyond that, there are few immediate research funding opportunities for Central Asian scholars. Based on the availability of opportunities it could be possible to have a nuanced interpretation of data. In fact, instead of giving a ready interpretation of the results, it may allow evaluating the outcomes in terms of existing availability of opportunities.

According to the Scimago country/region rankings from 1996 to 2018, we have observed that most Central Asian countries/regions have lost their rankings in the research results.

Table 5

Ranking of Central Asian countries in the study

Year/Number of countries	1996/ 212	2000 /218	2004/ 222	2008/ 226	2012/ 228	2016/ 233	2017/ 231	2018/ 233
Kazakhstan	80	86	89	97	92	63	64	65
Kyrgyzstan	133	134	145	136	140	135	134	132
Uzbekistan	70	73	77	94	100	104	106	108
Tajikistan	120	139	144	150	143	152	152	149
Turkmenistan	161	161	194	206	167	206	200	207

Source: Scimago

Like other Central Asian countries, Uzbekistan also lost her Scimago ranking due to lack of funds, lack of network and cooperation

opportunities. The proportion of Uzbekistan's research output in the world's research output has fallen from 0.03% in 1996 to 0.02% in 2018 since 1996. The same is true for Uzbekistan's research output in Asia (decreased from 0.23% in 1996 to 0.23% in 1996 and 05% in 2018).

Scientific production of countries ranked behind Uzbekistan in 1991 (date of collapse of USSR) and ahead Uzbekistan's current scientific production suggests that their current research output is strongly related to their international scientific collaboration[1]. Scientific collaboration became significant for all Central Asian countries based on study covering 1991-2013 period[2] (Wang, Chen, Bao *et al*, 2015). The authors underline that "... *2547 (23.1 %) of the total 11,025 papers were independently prepared by single author, other 8478 (76.9 %) were co-authored ones. Within the 9832 papers with author addresses, 4058 (41.3 %) were single institution papers and 5616 (57.1 %) were single country papers. Namely, 5774 (58.7 %) were inter-institutionally collaborative ones and 4216 (42.9 %) were internationally collaborative ones*" (2015; 1235). The data extracted from WoS from the Web of Science core collection shows that international cooperation is weighty in Uzbekistan's research output.

---

[1] Zimbabwe and Tanzania have high rates of cooperation with other countries both based on Scimago (both over 70%) or WoS data (over 30% for the first partner country). Lebanon's international cooperation in research output based on WoS remains very high (up to 40%). Azerbaijan and Georgia from post-Soviet space show a very high importance of international cooperation in their research outputs.

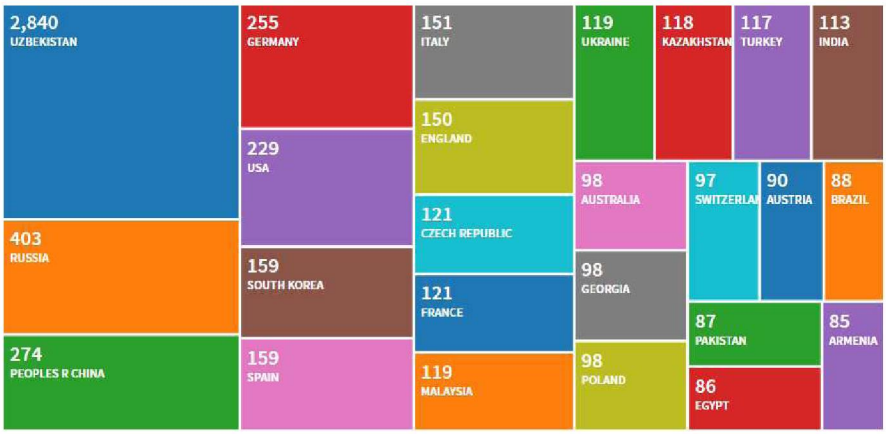


Figure 1. Vizualization treemap for research output from Uzbekistan (with main 25 partners) between 2016 and 2020 (March 2020)
Source: Web of Science

It indicates that Uzbekistan's research results are also somehow "dependent" on international cooperation. According to data for the past 15 years, the share of international cooperation in research results has grown more than that of the country's research results. Based on Scimago's data, the international cooperation rate of research results has risen from 18.02% in 1996 to 57.26% in 2017. WoS data shows that since the 1990s, although the number of articles produced in Uzbekistan has increased slowly but constantly, international cooperation has become an important pattern of research output.

Table 6

The research output of Uzbekistan (with IRC's top 10 partners) from 2006 to 2020 extracted every 5 years from the Wos Visualisation tree diagram

Period/ Ranking	No of articles 2006-2011		No of articles 2011-2015		No of articles 2016-2020 (march)	
1	Uzbekistan	2303	Uzbekistan	2417	Uzbekistan	2840
2	Russia	235	Russia	281	Russia	403
3	Germany	223	Germany	205	PR China	274
4	USA	202	USA	143	Germany	255
5	Italy	97	Spain	109	USA	229
6	Japan	96	Italy	105	South Korea	159
7	South Korea	92	PR China	100	Spain	159
8	Ukraine	71	Malaysia	87	Italy	151
9	Canada	64	England	71	England	150
10	France	57	South Korea	68	Czech Rep	121

Source: Prepared by author based on WoS data.

Research output has grown from 489 in 1991 to 776 items in 2019 (all categories referenced in WoS), while the ratio of participating countries in Uzbekistan's research output has more than doubled from 1995 to 2019 as indicated in table below.

Table 7

The share of international cooperation in Uzbekistan's research output in 1995 and 2019 (articles only)

Period/ Rank	1995			2019		
	Country	Record count	% of 377 – no of articles published	Country	Record count	% of 552 – no of articles published
1	Uzbekistan	377	100 %	Uzbekistan	552	100 %
2	Russia	39	10,345 %	PR China	107	19,384 %
3	USA	18	4,775 %	Russia	106	19,203 %
4	Japan	12	3,183 %	USA	80	14,493 %
5	Australia	9	2,387 %	Germany	75	13,587 %
6	Germany	9	2,387 %	South Korea	58	10,507 %
7	Ukraine	8	2,122 %	Spain	57	10,326 %
8	Armenia	7	1,857 %	England	55	9,964 %
9	PR China	7	1,857 %	Turkey	50	9,058 %
10	Sweden	7	1,857 %	Italy	49	8,877 %

Source: WoS, prepared by author.

Specific research fields such as physics, mathematics, chemistry, materials science and pharmacology are the main visible areas of research results. However, there were only 37 articles in the past 4 years (2016-2020) representing the fields such as history, area studies, political science, international relations, development studies, archaeology, economics, and social sciences. According to WoS, the Academy of Sciences of Uzbekistan is the leading research organization. This research organization is the leading unit in Central Asia since 1991 with nearly 6000 WoS referenced papers, and stable annual research output.

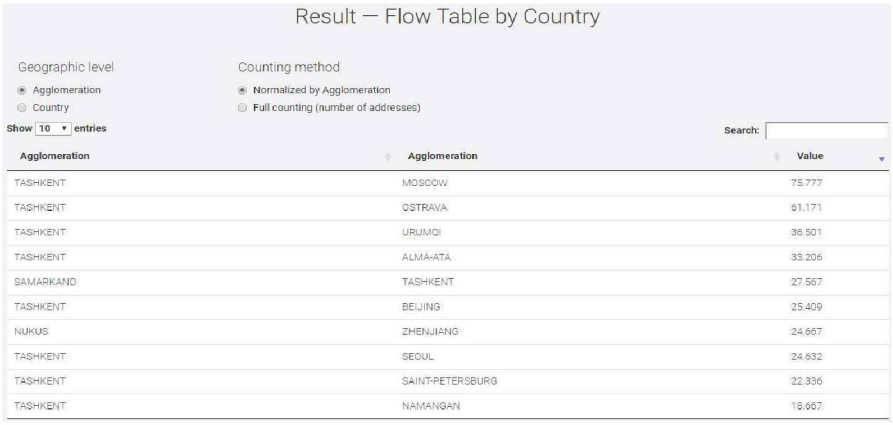
Based on WoS, Netscity application shows the degree of spatial international research cooperation between 2016 and 2019. As shown in Figure 2, during this period, the impact of international cooperation on national research output was still "moderate" (in comparison with other countries with similar results).

Figure 2. Scientific production volume of the top 10 countries/regions in Uzbekistan's IRC (based on WoS data, 2016-2019, articles only)
Source: Netscity

In addition, Netscity also demonstrated the role of agglomeration-based cooperation. Our research shows that cities such as Moscow, Beijing, Urumqi or Almaty are significant in Uzbekistan's research results. However, with the exception of Samarkand (Uzbekistan's second research output city), other Uzbek cities still play a relatively modest role in the scientific output cited in the WoS.

Figure 3. Scientific production per geographic unit, agglomerations
Source: Netscity

Tashkent is the centre of research results and cooperation, dominating most of the existing research cooperation. Uzbek capital occupies 90 of the 100 main bilateral cooperation relationships in Uzbekistan's research results, while has much a lower value in international research cooperation. The highest value of international cooperation among agglomerations (after Tashkent between 2016-2019) is observed by Nukus with 24 value (Nukus – Zhenjiang (China)), which is followed by Samarkand-Moscow (Russia) with only 8,5 value (Figure 4). Our study suggests that that international research cooperation of Uzbekistan is strongly linked to Tashkent and Uzbek capital occupies a central position in international research cooperation. However, this picture could be rather different in Scopus based data.



Result — Flow Table by Country

Geographic level
Agglomeration
Country

Counting method
Normalized by Agglomeration
Full counting (number of addresses)

Show 10 entries

Search:

Agglomeration	Agglomeration	Value
TASHKENT	MOSCOW	75.777
TASHKENT	OSTRAVA	61.171
TASHKENT	URUMQI	36.501
TASHKENT	ALMA-ATA	33.206
SAMARKAND	TASHKENT	27.567
TASHKENT	BEIJING	25.409
NUKUS	ZHENJIANG	24.667
TASHKENT	SEOUL	24.632
TASHKENT	SAINT-PETERSBURG	22.336
TASHKENT	NAMANGAN	19.667

Figure 4. Scientific collaborations between agglomerations per geographic unit
Source: Netscity

Finally, Uzbekistan's research cooperation includes more countries over the last years. Among the main research partners, China's role is constantly increasing and may even have a greater role in 2020s. However, regional research cooperation is very weak; Kyrgyzstan and Tajikistan are not among the main research partners of Uzbekistan, while Turkmenistan occupied a have very low score in Uzbekistan's research cooperation as shown in the figure below.

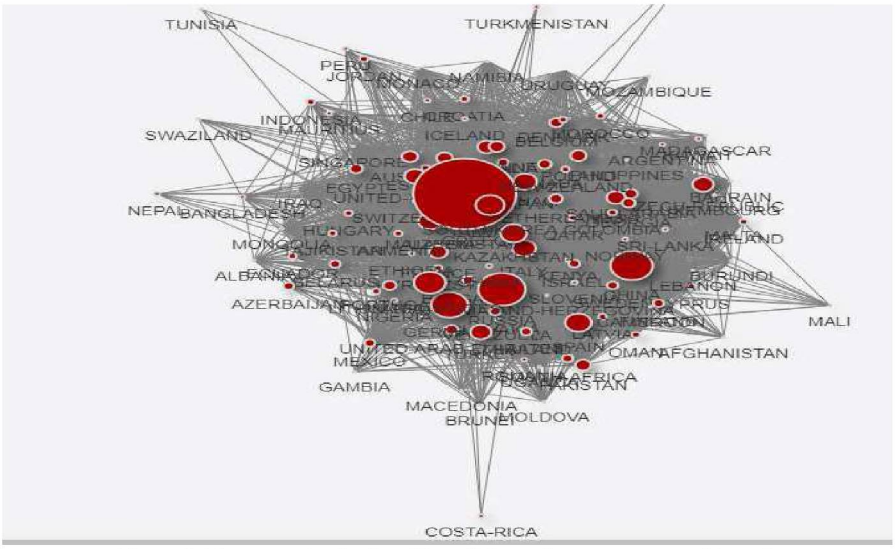


Figure 5. Flow graph of scientific collaboration per geographic unit
Source: Netscity

6. Discussion

Student mobility indicators based on UNESCO data show that internationalization has caused more inequality in this field. Although, we are not able to indicate precisely universities where students from Uzbekistan are enrolled, we consider that region-based approach could give us some estimations. For example, among the leading universities in Europe, Western Europe and North America (according to the classification of UNESCO) the proportion of students from Uzbekistan is relatively low. Between 1998 and 2017, the number of students participating in outward student mobility from Uzbekistan increased by almost 50 per cent (from 1329 to 1998). Although financial capacity has improved compared with the 1990s, the enrolment rate of Uzbek students in Europe, Western Europe and North American universities did not increase significantly. The data shows that despite the increase in the number of students, the enrolment rate of Uzbek students among all international students in Western European and North American universities fell from 9.4 per cent to 5.6 per cent (UNESCO). Central and

Eastern Europe region hosted most of the students from Uzbekistan (from 3,315 in 1998 to 25,244 in 2017), an increase of nearly 800 per cent. It shows that the inequality of spatial mobility to countries with leading universities and the reduced proportion of students who have benefited financially from studying abroad for a period of time. From the other hand, as shown in the different projects funded by the European Commission (Erasmus + 2018), Uzbek universities are willing to increase the cooperation with the universities in the EU. However, due to the structural constraints, students from Uzbekistan lack similar opportunities enjoyed by their EU peers. Consequently, the vectors of student mobility show that so-called internationalisation is not inclusive, nor planned, and does not yet correspond to the notion of "global citizenship" proposed by Yemini (2015). The CAEP report indicates that Uzbekistan may consider reviewing its approach to attract foreign students as well. The existing imbalance between incoming and outgoing academic mobility hampers the potential of the internationalisation process in Uzbekistan (Helbich, Miskovicova, 2017).

From the other hand, our data shows that research collaboration based on "recognized excellence" also exacerbates unequal conditions for research collaboration without always providing necessary opportunities. It shows the difficulty of research institutions and universities in developing countries, especially research institutions and universities in provinces, in finding new opportunities for international research cooperation. "Productivity", "excellence", "recognition", "impact", "outstanding scholar" and other existing measurement standards systematically reproduce the inequality in "recognized outstanding research" or "recognized research achievement". The current evaluation system without questioning existing opportunities creates a disadvantage in developing countries and puts their already fragile research systems at risk. Although we refuted the view of "Western hegemony" in our research results, the *status quo* in the global research system places leading research countries at the core of research cooperation. Therefore, the performance of developing countries is increasingly dependent on the participation of these "recognized" research networks.

There also many constraints hampering internationalisation in Central Asia, especially in case of Turkmenistan. It is noteworthy to

underline that the current Uzbek government is increasingly supporting the process of internationalisation of higher education. Among these many positive changes, it is worth highlighting the unconditional recognition of the degrees of the 1000 best universities in the world according to the QS WUR, Times Higher Education and Academic Ranking of World Universities. The presidential decree adopted in 2019, No. UP-5847 commits the government to ensure the academic independence of higher education institutions.

However, despite these positive trends there are also structural problems (Mukhitdinova, 2015; Naqvi, Kreyfets, 2014). One of them is related to the autonomy of higher education institutions. The state's neoliberal agenda reduced funding, increased its reliance on market resources, and increased private funding without privatizing educational services, which led to increased state control of higher education institutions. The contribution of Uzbekistan's universities to national research results is still small and internationalisation alone cannot be a solution to overcome this challenge. Consequently, no universities in Uzbekistan can be found in Scimago rating (except for the Academy of Sciences). In fact, higher university autonomy and the establishment of new research universities that are open to international cooperation are very useful for research output too. Our research also shows that the increase in the number of emerging universities has had a positive impact on research results. For example, the branch campus of the University of Turin in Tashkent provides visible results in WoS-based research. Therefore, World Bank report related to Central Asia suggests that (Naqvi, Kheyfets, 2014, 57) *"International evidence suggests that the degree of autonomy that HEIs have is positively linked to their research performance and to better management of human and financial resources"*.

Besides that, focusing on research universities is also important to overcome the "myth" of internationalisation (Knight 2009; de Wit 2020). Altbach (2013; 20) considers that, *"Research universities are typically the most internationalized postsecondary institutions"*. Despite the funding difficulties, establishing few research universities with more autonomy and focused on international cooperation may have strong impact in case of countries having limited research output. Altbach (2013; 3) adds that *"... most countries can support at least one university of sufficient quality, to participate in*

international discussions of science and scholarship and undertake research in one or more fields relevant to national development". Therefore, the recent presidential decree envisages placing two higher education institutions-Tashkent State University and Samarkand University among the top universities in the world, which is in line with the above considerations.

Another key issue concerns Uzbekistan's doctoral programs and their participation in the internationalization process. As stated in the UZDOC project about combining different doctoral education systems *"progressive elements of doctoral education come in conflict with the more traditional aspects, hindering the modernisation process and slowing the change momentum".* Although there is are challenges related to harmonization, we believe that international cooperation at the doctoral level, may have a powerful impact. The current conditions of doctoral students cannot provide the necessary conditions for better research results with important workload and a required number of "recognized" publications. In contrary, a number of studies have shown the negative impact of "mandatory" and "recognized" publication requirements in Central Asia (Kuzhabekova, Ruby, 2018 ; Yessirkepov et al, 2015; Machacek, Srholec, 2017). The discussion paper related to the PhD program in Uzbekistan stated that (Ganiev et al, 2017) *"The quality of research and publications should not be ensured by imposing a list of centrally selected journals, but rather through the provision of incentives for doing high-quality research".* Instead, it proposes to develop cooperation among researchers within thematic groups in Uzbekistan and outside which engages a critical mass of doctoral students in the joint learning of relevant research topics, the exchange of findings, the organisation of joint research, the preparation of project proposals, and publications.

Finally, the future of research and cooperation lies on younger generations of the country. Unfortunately, the median age of researchers and those over 65 is another critical issue. Mukhitdinova touches this issue in case of Uzbekistan: *"Almost all holders of a Candidate of Science, Doctor of Science or PhD are more than 40 years old and half are aged over 60; more than one in three researchers (38.4%) holds a PhD degree, or its equivalent, the remainder holding a bachelor's or master's degree".* International research cooperation can be better developed if more younger scholars are engaged in the development of research initiatives and programmes.

7. Conclusion

This article shows that international cooperation in the field of student mobility and research cooperation is an important international field with international potential. However, we found that globalization led to an unequal cooperation between countries and regions. Despite the fact that reducing inequality within and between countries is part of the United Nations Sustainable Development Goals (SDG 10), Central Asian countries seem to not benefit from that.

Since the collapse of the Soviet Union, Uzbekistan's research capacities have been affected, which can be observed in the global ranking of research results. Currently, Central Asia as a region has no "centrality" in the international mobility of students or research cooperation. On the other hand, as our study shows with the case of Uzbekistan, countries are developing relations in both areas of internationalisation with neighbouring countries, as well as Asian countries on the basis of immediate opportunities. The new vectors and opportunities of research cooperation develop and regional (between Kazakhstan and Uzbekistan) cooperation emerge in Central Asia.

Future studies on the values and norms prevailing in the internationalisation processes of Central Asian countries could be of importance. Work on the capacities in the field of internationalisation of higher education institutions and research will also provide an interesting analysis. In addition, a comparative study between the scientific production referenced at Scopus and WoS may also raise many questions concerning publication practices but also the establishment of international collaboration networks.

REFERENCES

Alimukhamedov, Farkhad. 2011. Des Migrations pour études : Une analyse sociopolitique de trajectoires d'étudiants ouzbeks en France et au Royaume-Uni, PhD Thesis, Université Paris Dauphine, 2011

Altbach, Philipp. 2013. "Advancing the national and global knowledge economy: the role of research universities in developing countries", *Studies in Higher Education*, 38:3, 316-330, DOI: 10.1080/03075079.2013.773222

Blaud. Célestin. 2001. *La question de retour et de non retour des étudiants africains dans le pays d'origine après la formation*, Harmattan

Borgogno Victor and Streiff-Fénart, Jocelyne. 1997. « L'accueil des étudiants étrangers en France : évolution des politiques et des représentations », *Cahiers de l'Urmis* [En ligne], 2-3 | juin 1997, http://journals.openedition.org/urmis/415 ; DOI :https://doi.org/10.4000/urmis.415

Chankseliani, Maia. 2015. "Escaping Homelands with Limited Employment and Tertiary Education Opportunities: Outbound Student Mobility from Post-Soviet Countries", *Population, Space and Place* Published online in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/psp.1932

Crăciun, Daniela.2018. "National Policies for Higher Education Internationalization: A Global Comparative Perspective". In *European Higher Education Area: The Impact of Past and Future Policies*, edited by Curaj A., Deca L., Pricopie R: Springer, Cham

De Wit, Hans. 2011. "Globalisation and Internationalisation of Higher Education." *Revista de Universidad y Sociedad del Conocimiento (RUSC)*. vol. 8, no 2, pp. 241-248

De Wit, Hans. 2011. "Internationalization of Higher Education: Nine Misconception." *International Higher Education*, No 64, Summer Issue, pp. 6-7.

De Young, Alan.J, Kataeva Zumrad, Jonbekova Dilrabo. 2018. Higher Education in Tajikistan: Institutional Landscape and Key Policy Developments. In *25 Years of Transformations of Higher Education Systems in Post-Soviet Countries*, editors Huisman J., Smolentseva A., Froumin I. Palgrave Studies in Global Higher Education. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-319-52980-6_14

European Commission. 2017. *Uzbekistan – Overview of the Higher Education System*. https://eacea. ec.europa.eu/sites/eacea-site/files/countryfiche_uzbekistan_2017.pdf

Franck, Ander Gunter. 1970. "The development of underdevelopment", New York, Monthly Review Press

Ganiev, Ibragim, Djanibekov, Nodir, Hasanov, Shavkat, Petrick, Martin 2017. "The state of doctoral research in Uzbekistan: Results of a survey of doctoral students in agricultural economics." *Discussion paper 164, Leibniz Institute of Agricultural Development in Transition Economies*, Halle, Germany. Retrieved from https://econpapers.repec.org/paper/agsiamodp/259805.htm

Helbich, Jan and Miskovicova, Andrea. 2017. "Stock-taking Report on Existing Capacity Development and Mobility Programmes between the EU and Central Asia Countries." *European Union Programme for Central Asia, Central Asia Education Platform Phase II (CAEP II)* Retrieved from https://www.caep-project.org/wp-content/uploads/2017/06/CAEP_Mobility_Report-30_04_2017.pdf

Jones, Peter. 2010. "Education as foreign policy: the European Union in Central Asia.", In *Globalization on the Margins: Education and Post-Socialist Transformations in Central Asia*. Charlotte, US. Information Age Publishing.

Jumakulov, Zakir, Ashirbekov, Adil, Sparks, Jason and Sagintayeva, Aida. 2018. "Internationalizing Research in Kazakhstan Higher Education: A Case Study of Kazakhstan's State Program of Industrial Innovative Development 2015 to 2019." *Journal of Studies in International Education*. 23. 102831531878644. 10.1177/1028315318786445.

Kenebayeva, Ainur. 2018. "Internationalization of Higher Education in Kazakhstan: National Capacity-Building Initiatives." In *Policies and Initiatives for the Internationalization of Higher Education* IGI Global (pp.153-174), 10.4018/978-1-5225-5231-4.ch009.

Kerimkulova, Sulushash & Kuzhabekova, Aliya. 2017. « Quality Assurance in Higher Education of Kazakhstan". In *The Rise of Quality Assurance in Asian Higher Education* (pp.87-108), DOI 10.1016/B978-0-08-100553-8.00006-9.

Knight, Jane. 2004. "Internationalization Remodelled: Definition, Approaches, and Rationales." *Journal of Studies in International Education* 8 (1): 5-3

Knight, Jane. 2008. *Higher Education in Turmoil. The Changing World of Internationalisation.* Rotterdam, The Netherlands: Sens

Knight, Jane. 2015. "Five Myths about Internationalization." *International Higher Education*, (62), https://doi.org/10.6017/ihe.2011.62.8532

Kuzhabekova, Aliya and Mukhamejanova, Dinara. 2017. "Productive researchers in countries with limited research capacity: Researchers as agents in post-Soviet Kazakhstan." *Studies in Graduate and Postdoctoral Education*, Vol 8, No 1, pp. 30-47

Kuzhabekova, Aliya and Ruby, Alan. 2018. "Raising Research Productivity in a Post-Soviet Higher Education System: A Case From Central Asia", *European Education*, 50:3, pp. 266-282

Kuzhabekova, Aliya. 2020. "Invisibilizing Eurasia: How North–South Dichotomization Marginalizes Post-Soviet Scholars in International Research Collaborations". *Journal of Studies in International Education*, 24(1), 113-130

Kwiek, Marek. 2015. "Inequality in Academic Knowledge Production". In *The Transformation of University Institutional and Organizational Boundaries*, edited by Reale E., Primeri E, Higher Education Research in the 21st Century Series. SensePublishers, Rotterdam

Lee, Jack.T., Kuzhabekova, Aliya. Reverse flow in academic mobility from core to periphery: motivations of international faculty working in Kazakhstan. High Educ 76, 369–386 (2018). https://doi.org/10.1007/s10734-017-0213-2

Machacek, Vit and Srholec, Martin. 2017. "Predatory journals in Scopus", Czech Academy of Sciences, Institute of Democracy and Economic Analysis, Study 2, Retrieved from https://idea-en.cerge-ei.cz/files/IDEA_Study_2_2017_Predatory_journals_in_Scopus/mobile/index.html

Maisonobe, Marion, Jégou, Laurent, Yakimovich, Nikita and Cabanac, Guillaume. 2019. "NETSCITY: a geospatial application to analyse and map world scale production and collaboration data between cities." *ISSI'19: 17th International Conference on Scientometrics and Informetrics*, Retrieved from https://www.irit.fr/publis/IRIS/2019_ISSI_MJYC.pdf

Matei, Liviu, Iwinska Julia and Crăciun, Daniela.2015. "Patterns of Funding Internationalisation of Higher Education. A Conceptual Framework for the Study of Internationalisation", edited by Curaj A., Matei L., Pricopie R., Salmi J., Scott P. in *The European Higher Education Area.* Springer, Cham

Merrill, Marta. 2011. "Internationalizing Higher Education in Central Asia: Definitions, Rational, Scope and Choices". In *Globalization on the Margins: Education and Post-*

Socialist Transformations in Central Asia, editor Silova,I, 145-173. Charlotte: Information Age Publishing

Mukhitdinova, Nasibakhon. 2015. "Central Asia", in *UNESCO Science Report, Towards 2030*. Paris: UNESCO, pp. 365-387. Retrieved from: http://en.unesco.org/USR-contents

Naqvi, Naveed Hassan and Kheyfets, Igor. 2014. *Uzbekistan – Modernizing Tertiary Education*. Washington, D.C.: World Bank Group, Report No. 88606-UZ, Retrieved from https://www.worldbank.org/content/dam/Worldbank/document/eca/central-asia/Uzbekistan-Higher-Education-Report-2014-en.pdf

Ruziev Kobil, Burkhanov Umar. 2018. "Uzbekistan: Higher Education Reforms and the Changing Landscape Since Independence". In *25 Years of Transformations of Higher Education Systems in Post-Soviet Countries*, edited by Huisman J., Smolentseva A., Froumin I., Palgrave Studies in Global Higher Education. Palgrave Macmillan, Cham

Sabzalieva Emma 2015. "Challenges in contemporary higher education in Kyrgyzstan, Central Asia." *Perspectives: Policy and Practice in Higher Education*, DOI: 10.1080/13603108.2015.1011727

Sabzalieva, Emma, Martinez, Magdalena and Sá, Creso. 2020. « Moving Beyond "North" and "South": Global Perspectives on International Research Collaborations." *Journal of Studies in International Education*, 24(1), 3–8

Sagintayeva, Aida and Kairat Kurakbayev. 2013. "Internationalisation of Higher Education in Central Asia: the Case of Kazakhstan". In *Going Global: Identifying Trends and Drivers of International Education*, editors Stiasny, M. and Gore, M. Emerald: Bingley, UK. pp. 17-27

Sjaastad, Larry. 1962. "The Costs and Returns of Human Migration." *Journal of Political Economy* 70, no. 5 (1962): 80-93

Stier, Jonas. 2006. "Internationalisation, intercultural communication and intercultural competence." *Journal of Intercultural Communication*, Issue 11, 2006

Syed Zwick, Helene 2019. « Le modèle de motivation – opportunité – capacité : application à la mobilité étudiante régionale en Asie centrale. » Journal of international Mobility, 1(1), 45-68. https://doi.org/10.3917/jim.007.0045

Tamtik, Merli. 2017. "Who governs the internationalization of higher education? A comparative analysis of macro-regional policies in Canada and the European Union." *Comparative and International Education / Éducation Comparée et Internationale*: Vol. 46 : Iss. 1 , Article 2. Available at: http://ir.lib.uwo.ca/cie-eci/vol46/iss1/2

Tirado, Daina Ibanez. 2019. "West-Central Asia: A comparative analysis of students' trajectories in Russia (Moscow) from the 1980s and China (Yiwu) from the 2000s." *Journal of Eurasian Studies*, *10*(1), 48-60

Tuychiev. Sokhibjon. 2016. "A bibliometric analysis of innovation-related research of the former Soviet Union five "Stans": are there distinct patterns?" Master Thesis in Master in Information Engineering, Universidade do Porto, Retrieved from https://repositorio-aberto.up.pt/bitstream/10216/85077/2/139164.pdf

Ubaydullaeva, Dilnoza. 2020. "Franchise" Branch Campuses in Uzbekistan: The Internationalisation of Higher Education as a Solution?, *Central Asian Affairs* 7 (2020) 152-174. Central Asian Affairs. 7. 10.30965/22142290-00702002.

Uralov. Ozodjon. 2020. "Internationalization of Higher Education in Uzbekistan." *Social Sciences and Humanities, Open 2*,

UZDOC. 2016. "Outcomes of the UZDOC project: Further development of doctoral education in Uzbekistan: Recommendations for quality assurance in doctoral education in Uzbekistan". Retrieved from: http:// uzdoc.eu/sites/default/files/uzdoc-booklet-single_page.pdf

Wang, Lixian, Chen, Xi, Bao, Anming, Zhang, Xiaoyun, Wu, Miao, Hao, Yun and He, Jingjing. 2015. "A bibliometric analysis of research on Central Asia during 1990–2014." *Scientometrics* 105, 1223-1237. https://doi.org/10.1007/s11192-015-1727-y

Wegmarshaus, Gert-Rüdiger. 2017. "Uzbekistan's higher education and research system: Main actors and recent reforms of doctoral graduation", Discussion Paper, No. 165, *Leibniz Institute of Agricultural Development in Transition Economies* (IAMO), Halle (Saale)

Yemini, Miri. 2015. "Internationalisation discourse hits the tipping point." *Perspectives: Policy and Practice in Higher Education*, 19:1, 19-22.

Yessirkepov, Marlen, Nurmashev,Bekaidar and Anartayeva, Mariya. 2015. "Scopus-Based Analysis of Publication Activity in Kazakhstan from 2010 to 2015: Positive Trends, Concerns, and Possible Solutions", *J Korean Med Sci* 2015; 30: 1915-1919

Appendices

A. Vizualization treemap for research output of Uzbekistan (with main 25 partners) between 2011-2015 and .2006-2011 (articles only). Based on WoS data.

Articles published between 2011-2015

Articles published between 2006-2011

B. Share of Uzbekistan and international cooperation in research output in 1995 and 2019 (articles only). Based on WoS data

Select	Field: Countries/Regions	Record Count	% of 377	Bar Chart
☐	UZBEKISTAN	377	100.000 %	
☐	RUSSIA	39	10.345 %	
☐	USA	18	4.775 %	
☐	JAPAN	12	3.183 %	
☐	AUSTRALIA	9	2.387 %	
☐	GERMANY	9	2.387 %	
☐	UKRAINE	8	2.122 %	
☐	ARMENIA	7	1.857 %	
☐	PEOPLES R CHINA	7	1.857 %	
☐	SWEDEN	7	1.857 %	

(28 Countries/Regions value(s) outside display options.)

Select	Field: Countries/Regions	Record Count	% of 552	Bar Chart
☐	UZBEKISTAN	552	100.000 %	
☐	PEOPLES R CHINA	107	19.384 %	
☐	RUSSIA	106	19.203 %	
☐	USA	80	14.493 %	
☐	GERMANY	75	13.587 %	
☐	SOUTH KOREA	58	10.507 %	
☐	SPAIN	57	10.326 %	
☐	ENGLAND	55	9.964 %	
☐	TURKEY	50	9.058 %	
☐	ITALY	49	8.877 %	

(85 Countries/Regions value(s) outside display options.)

C. Scientific production per geographic unit, Samarkand and Bukhara (WoS, 2016-2019, articles only)

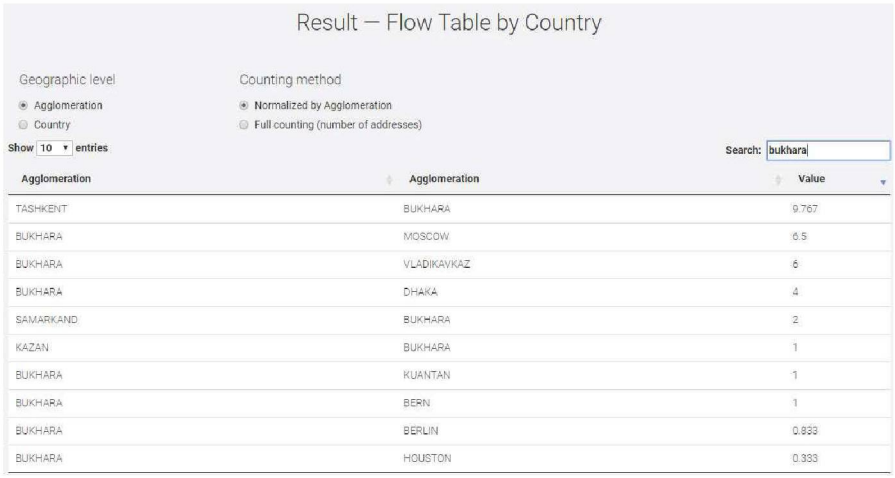
Result – Flow Table by Country

Geographic level
- (•) Agglomeration
- ( ) Country

Counting method
- (•) Normalized by Agglomeration
- ( ) Full counting (number of addresses)

Show 10 entries Search: samarkand

Agglomeration	Agglomeration	Value
SAMARKAND	TASHKENT	27.567
SAMARKAND	MOSCOW	8.569
SAMARKAND	SEOUL	5.4
SAMARKAND	BEIJING	4
SAMARKAND	QARSHI	3
SAMARKAND	WONJU	2.2
SAMARKAND	BERLIN	2.005
SAMARKAND	VIENNA	2.003
SAMARKAND	JOHOR-BAHRU	2
SAMARKAND	MILAN-PAVIA	2



Result — Flow Table by Country

Geographic level

- (•) Agglomeration
- ( ) Country

Counting method

- (•) Normalized by Agglomeration
- ( ) Full counting (number of addresses)

Show 10 entries

Search: bukhara

Agglomeration	Agglomeration	Value
TASHKENT	BUKHARA	9.767
BUKHARA	MOSCOW	6.5
BUKHARA	VLADIKAVKAZ	6
BUKHARA	DHAKA	4
SAMARKAND	BUKHARA	2
KAZAN	BUKHARA	1
BUKHARA	KUANTAN	1
BUKHARA	BERN	1
BUKHARA	BERLIN	0.833
BUKHARA	HOUSTON	0.333